FIRE PROTECTION BUREAU

WASHINGTON STATE STANDARD FOR MARINE FIREFIGHTING FOR LAND-BASED FIREFIGHTERS

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Standard for Marine Firefighting for Land-Based Firefighters

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Standard for Marine Firefighting for Land-Based Firefighters

Chapter 1
AN INTRODUCTION TO MARINE FIREFIGHTING FOR LAND-BASED FIREFIGHTERS

1-1 **Scope.** This standard identifies the elements of a comprehensive marine firefighting response program including, but not limited to, vessel familiarization, training considerations, pre-incident planning, and special hazards that enable land-based firefighters to extinguish vessel fires safely and efficiently. In general, the practices recommended in this publication apply to vessels that call at North American ports or that are signatory to the International Safety of Life at Sea (SOLAS) agreement.

1-2 **Purpose.** Due to the very complex nature of marine firefighting, this standard is directed at land-based firefighters who respond to shipboard fires aboard merchant vessels, typically within a port area.

The strategies and tactics utilized to attack a fire aboard a vessel are similar in many ways to those used in attacking structure fires. However, there are many aspects of marine firefighting that warrant special attention because of the unique environment encountered aboard a vessel.

1-3 **General.** To address this major void in knowledge and understanding of vessel firefighting procedures, the NFPA, at the request of, and in cooperation with, the United States Coast Guard (USCG), the fire service, and the maritime community, has developed Guide 1405 for use by local firefighting organizations that could be confronted with a fire aboard a vessel.

1-3.1 This document is based upon NFPA Guide 1405 and is written in a standardized "Awareness, Operations, and Technician" format so that fire departments, federal agencies, and private enterprises can bring their personnel to the standard level needed for their application.

1-3.2 Due to the ever-increasing familiarity and use of the Incident Command System by fire service organizations, the Coast Guard and several other response systems, as well as the mandated training these organizations already receive on ICS, ICS will not be covered as a topic within this standard. The use of Unified Comment as part of the Incident Command Structure will be discussed as it applies to marine fire operations.

1-3.3 Performance of the awareness requirements will be tested by oral and/or written performance exams.

1-3.4 Successful completion of awareness level training is a prerequisite for entry into operations level training. Operations performance shall be tested by oral and/or written performance exams, and practical skills evaluation.

1-3.5 Successful completion of awareness and operations level training is a prerequisite for entry into technician level training. Technician performance shall be tested by oral, written, and practical skills evaluation.

1-3.6 The evaluators and proctors for this standard should be selected in accordance with the requirements of the authority having jurisdiction.

Chapter 2
MARINE FIREFIGHTER - AWARENESS LEVEL

2-1 General. Portions of the requirements for the Awareness level are taken from NFPA 1405 1996 Edition, "Guide for Land-Based Firefighters Who Respond to Marine Vessel Fires." The Awareness Level is designed to enable responders to understand the differences encountered at incidents in the marine environment as opposed to land-based operations providing information to enhance safety during marine incidents. The following information is directed to personnel who wish to obtain the "Awareness Level" of Marine Firefighting Training.

2-1.1 For certification at the awareness level, the candidate shall pass a written exam with a minimum score established by the authority having jurisdiction.

2-1.2 General knowledge requirements: marine terminals, piers and wharves, vessel construction, types of vessels, vessel fire control plan, structural fire protection, interior arrangements, marine environment, problems associated with marine responses, and authority of emergency responders.

2-1.3 To be able to clearly understand the information provided by the vessel's crew during an emergency, firefighters must understand the definitions contained in Appendix A of this standard.

2-2 Marine Terminals. In general, a marine terminal is the place where a merchant vessel moors to conduct business. Differences in type, size, construction, cargo-handling, and firefighting equipment make each marine terminal unique. The candidate shall:

2-2.1 Identify marine terminal type given a picture, slide, or definition of the terminal.

2-2.2 Identify marine terminal hazards given a terminal type.

2-3 Piers and Wharves. Piers and wharves may be constructed from varying materials. Creasote-soaked wood pilings are often the in-water foundations for either wood, concrete, or steel-framed piers and wharves. Given textbook information, the candidate shall:

2-3.1 Identify the problems, and risks associated with piers and wharves.

2-3.2 Identify fixed firefighting equipment and potable water systems in use on piers and wharves.

2-4 Vessel Familiarization and Basic Vessel Construction. Large vessels are constructed of steel or aluminum plates welded together. This includes the side shell or hull, the decks, and the internal framing. The interior bulkheads can be made of steel or other materials, if they meet certain fire-resistive requirements established by both national law and international convention.

Smaller vessels—such as pleasure craft and fishing vessels—may be constructed of fiberglass, wood, concrete, or aluminum. These vessels may be modified by their owners, and the use of fire-resistive materials in bulkheads may be limited or non-existent.

Given a vessel description, the candidate shall:

2-4.1 Identify different materials used in construction of vessels.

2-4.2 Identify vessel structural components, including: keel, frames, hull, beam, decks, platforms, stringers, girders, and coamings.

2-4.3 Identify areas of vessels: aft, bow, superstructure, weather deck, 'tween deck, amidship, and forecastle.

2-4.4 Identify how vessels are flagged and provide information on where you would find information on the different regulations each vessel must follow.

2-5 Types of Vessels. The types of vessels are numerous and diverse. These vessels may come from any country and be in various states of repair or disrepair. Vessels can be classified into several general categories. The candidate shall:

2-5.1 Given a picture, slide, or definition, identify the types of vessels found in the response area, such as dry bulk carriers, break bulk carriers, roll on/roll off vessel, container vessel, bulk liquid carriers, passenger vessel, ferries, barges, tug/tow boat, car carriers, and fishing vessels.

2-6 Vessel Fire Control Plans. The vessel's fire control plan identifies the fire protection features and arrangement of the vessel. Fire control plans are generally required for large commercial vessels. Typically, this does not include tugs, barges, and commercial fishing vessels. Given International Maritime Organization requirements for fire control plans and a vessel fire control plan, the candidate shall:

2-6.1 Identify the location of fire control plans on board a vessel, and how response personnel can utilize them during operations.

2-6.2 Identify, fire extinguishing systems, portable extinguishers, fire stations, and the international shore connection.

2-7 Interior Construction: Structural Fire Protection. Structural fire protection is an essential element in vessel construction and design. Given a vessel fire control plan, or other means, the candidate shall:

2-7.1 Identify different bulkhead ratings as to classification, fire resistance, smoke resistance, and where typically found.

2-7.2 Identify interior arrangements as to ladders, companionways, passageways, cabins, machinery spaces, and cargo holds.

2-7.3 Identify exits from each compartment, machinery space, and cargo hold.

2-8 Marine Environment. Response to a vessel fire involves unique risks in addition to those faced in a land-based response. Given charts, maps and pre-incident plans, the candidate shall:

2-8.1 Describe the effects of weather, wind and tide on a vessel.

2-8.2 Describe the effects of a vessel incident on the environment.

2-8.3 Describe the unique differences between structural fire fighting on land and fire fighting on a vessel.

2-8.4 Describe the unique firefighter safety issues involved in a vessel fire.

2-8.5 Describe and/or demonstrate personal safety on a vessel and at a port facility.

2-9 Authority of Emergency Responders. Given International Maritime Organization Conventions and national, state, and local legislation, the candidate shall:

2-9.1 Identify the authority of the vessel master.

2-9.2 Identify the authority of the emergency responder as it relates to a vessel incident.

2-9.3 Identify the authority of the national agency responsible for port safety.

Chapter 3
MARINE FIREFIGHTER - OPERATIONS LEVEL

3-1 General. Portions of the requirements for the Operations level are taken from NFPA 1405, 1996 Edition, "Guide for Land-Based Firefighters Who Respond to Marine Vessel Fires." The candidate shall have successfully completed "Marine Firefighter - Awareness Level" requirements.

3-1.1 For certification at the operations level the candidate shall pass a comprehensive written and practical exam, with a minimum score established by the authority having jurisdiction at completion of the operations level class. The candidate shall demonstrate the ability to board and move about a vessel as required in this chapter.

3-1.2 General knowledge requirements: ability to describe vessel crew organization, shipboard fixed firefighting systems, special resources for vessel fire fighting, fire fighting equipment, vessel documentation and communications, unified command system , shipboard fire fighting tactics, and personnel safety.

3-2 Vessel Personnel. Vessel crews are organized with a specific chain of command During an emergency, fire fighters may encounter significant communications and cultural barriers.

Given a list of list of vessel personnel, the candidate shall:

3-2.1 Identify a vessel's chain of command and be able to describe the function of each position.

3-2.2 Identify, the key vessel personnel to be contacted by emergency response personnel during a vessel incident.

3-2.3 Identify the information that may be obtainable from each of the key vessel personnel.

3-3 Shipboard Fixed Firefighting Systems. Most vessels have built-in fixed fire systems to extinguish fires in certain areas of the vessel.

Given textbook information and a vessel visit, the candidate shall:

3-3.1 Identify the different types of fixed fire fighting system found on board vessels.

3-3.2 Board a vessel and identify the fixed firefighting systems on board, including fire mains, branch lines, fire stations, fire pumps, sprinklers, spray systems, foam systems, dry chemical systems, CO2 systems, and halon systems.

3-3.3 Identify and demonstrate the attachment of the international shore connection to the vessel.

3-3.4 Describe the benefits and limitations of the international shore connection.

3-4 Special Resource Considerations. The unique nature of marine firefighting requires consideration of methods and resources beyond those normally employed shoreside. Resources include special equipment and personnel available to provide assistance.

Given textbook information and knowledge of available port resources the candidate shall:

3-4.1 Identify the uses of support vessels such as fireboats, tugboats, barges, supply boats, pollution response vessels, crewboats, and launches.

3-4.2 Describe the capabilities and capacities of these support vessels.

3-4.3 Describe the authority and function of the national and local agencies responsible for port safety as it pertains to vessel fires.

3-4.4 Identify the need for technical specialists such as naval architects, marine engineers, marine chemists and interpreters.

3-4.5 Identify the need for operational support which may include hazmat, environmental response, vessel movement, and additional fire service resources.

3-5 Firefighting Equipment. Vessel firefighting equipment may vary in condition, capacity and compatibility with fire service equipment. Given a vessel fire scenario, and vessel fire control plan, the candidate shall:

3-5.1 Identify the uses and limitations of vessel firefighting systems.

3-5.2 Identify the use and limitations of fire service equipment.

3-5.3 Identify the use and limitations of special resources.

3-6 Vessel Documentation and Communications. Sources of information include vessel personnel, fire control plans and other vessel documents.

Given a vessel visit opportunity, the candidate shall:

3-6.1 Prior to boarding the vessel, read and record vessel draft marks in English or metric units.

3-6.2 Board a vessel and locate the fire control plan.

3-6.3 Locate the dangerous cargo manifest and cargo stowage plan.

. **3-6.4** Locate the vessel muster list or station bill.

3-6.5 Locate the vessel stability manual or letter.

3-6.6 Locate the vessel International Maritime Dangerous Goods Code and use it to describe emergency actions for an item on the dangerous cargo manifest.

3-6.7 Determine the native language of the master and key members of the crew and describe ways to communicate with them if their language is other than english.

3-6.8 Identify and describe vessel communications equipment: internal telephones, low output portables, and marine radio frequencies.

3-6.9 Identify and describe communications logistics and inhibitors as they relate to communications on board a vessel.

3-7 The Unified Command System. A response to a vessel incident usually involves multiple agencies with overlapping authority and jurisdiction. The unified command provides a method for different agencies, organizations, and individuals to work together toward a common goal in an organized, productive, efficient, and effective manner. The ICS consists of procedures for controlling personnel, facilities, equipment, and communications during all phases of an incident and is the management tool used by the unified command.

Given a vessel fire scenario, the candidate shall:

3-7.1 Identify the different components of an ICS system.

3-7.2 Identify the federal, sate/provincial and local government response agencies for a vessel incident.

3-7.3 Describe the roles and responsibilities of an incident commander, vessel master, and national authority for port safety in a unified command.

3-8 Shipboard Firefighting Tactics. Firefighting tactics are influenced by the type of space, location vessel construction and type of cargo involved in the fire. Fire on a vessel can be confined and can also spread in a manner different from a shoreside structure:

Given a vessel fire scenario, a vessel or simulated vessel structure and firefighting equipment, the candidate shall:

3-8.1 Identify the appropriate tactics for confinement and extinguishment of fires in machinery, accommodations and cargo spaces.

3-8.2 Demonstrate techniques for gaining access and establishing egress from the vessel.

3-8.3 Demonstrate establishment of water supply on board the vessel.

3-8.4 Demonstrate advance hoses to protect fire boundaries and attack the fire.

3-8.5 Demonstrate fire control by closing dampers, vents, ducting, watertight doors, and non-watertight doors.

3-8.6 Describe the appropriate hose placement, nozzle and water conservation techniques.

3-8.7 Record and monitor changes in vessel drafts, list, trim and hull deflection.

3-9 Personnel Safety. Marine firefighting requires the use of full protective clothing and equipment as required in NFPA 1500, 1996 Edition, "Standard on Fire Department Occupational Safety and Health Program."

Given textbook information, water rescue equipment, protective clothing and SCBA, and a swimming pool facility, the candidate shall:

3-9.1 Demonstrate the use of personal flotation devices.

3-9.2 Demonstrate the ability to remain afloat while wearing station uniform and full protective clothing, including SCBA.

Chapter 4
MARINE FIREFIGHTER - TECHNICIAN LEVEL

4-1 General. Portions of the requirements for the Technician level are taken from NFPA 1405, 1996 Edition, "Guide for Land-Based Firefighters Who Respond to Marine Vessel Fires." The candidate shall have successfully completed "Marine Firefighter – Operations Level" requirements.

4-1.1 For certification at the technician level the candidate shall pass a comprehensive written and practical exam, with a minimum score established by the authority having jurisdiction at completion of the technician level class.

4-1.2 General knowledge requirements: hazards in the marine environment, vessel firefighting strategy, vessel stability, unified command, and special equipment.

4-2 Hazards in the Marine Environment. A fire onboard a vessel, there are additional hazards that are not usually encountered at a residential fire.

Given a vessel fire scenario, the candidate shall:

4-2.1 Describe impact of vessel location on fire fighting operations.

4-2.2 Describe influences of tides, currents, weather, vessel traffic, channels and navigation, and bottom conditions on vessel fire fighting operations.

4-2.3 Describe the implications of changes in vessel draft trim, list and hull deflection.

4-3 Vessel Fire Fighting Strategy. Vessel construction and systems allow different strategies for extinguishing a fire.

Given a vessel fire scenario, the candidate shall:

4-3.1 Describe the considerations for allowing vessel entry into a port and choosing a fire fighting site for the vessel.

4-3.2 Describe the fire fighting considerations for selecting an offensive or defensive strategy.

4-3.3 Describe the legal considerations in selecting an offensive or defensive strategy.

4-3.4 Describe the use of the vessel's firefighting and mechanical systems to support an offensive or defensive strategy.

4-3.5 Describe the actions necessary to maintain the position of the vessel.

4-3.6 Describe the sources of potential pollution and the actions necessary to control pollution.

4-4 Vessel Stability. In combating a fire aboard a vessel, attention should be given to the volume of water used for to extinguish the fire and its effect on the stability of the vessel. Water applied to a

vessel fire can jeopardize the stability of the vessel and subsequently the safety of the personnel onboard.

Given textbook information, a vessel righting arm curve, and a vessel fire scenario, the candidate shall:

4-4.1 Define the terms related to a vessel's stability listed in NFPA Guide 1405.

4-4.2 Describe the free surface effect on a vessel's stability.

4-4.3 Identify the factors affecting a vessel's stability during firefighting and dewatering operations.

4-4.4 Describe the effect of firefighting water on a vessel's stability.

4-4.5 Describe dewatering and other methods for maintaining vessel stability, and for correcting list trim and hull deflection.

4-5 Unified Command. The candidate needs a strong background in an ICS system. The technician, if called, may respond as a lead person as a possible overhead team to a major incident and should be qualified to work at any position on the incident commander's team.

Given a vessel fire scenario and a tabletop or other simulated fire exercise, the candidate shall:

4-5.1 Define command structure in accordance with the ICS policies of the authority having jurisdiction.

4-5.2 Acting as a member of the unified command structure, with consideration given to multiple agency involvement, develop appropriate strategy and tactics to manage the simulated incident.

4-5.3 Monitor the condition of the vessel and modify strategy and tactics appropriately.

4-5.4 Define post-incident activities.

4-5.5 Contribute to a post-incident critique and make constructive comments.

4-6 Special Equipment. The technician level candidate should have a good understanding of equipment that can be adapted to vessel fire fighting.

Given knowledge of resources within the authority having jurisdiction, the candidate shall identify special equipment or methods for:

4-6.1 Gaining access.

4-6.2 Applying agent.

4-6.3 Monitoring atmosphere.

4-6.4 Removing water.

4-6.5 Measuring atmospheres immediately dangerous to life and health (IDLH).

Appendix A: Glossary

1-4 **Common Maritime Definitions.** IFSTA Glossary

Glossary

A

Abeam — Directly off the side of a vessel; in a direction at right angles to the middle of the vessel's length. An object is said to be abeam when it is to the side of a vessel.

Aboard — In or on a vessel; opposite of ashore.

Accommodation Ladder — Vessel's own gangway (usually one on each side) fitted with means of raising and lowering; also a set of steps or ladder used for getting from one deck to another.

Accommodation Spaces — Areas of a vessel (cabins) designed for living. They are subdivided into officer, crew, and passenger accommodations.

Adrift — To float about, not under control, at the whim of the wind and tide; a vessel floating at random. Something abandoned at sea is said to be cast adrift.

Aft (After) — Direction towards the back end or stern of a vessel; term used relative to some other part of a vessel indicating the direction toward the stern.

Afterpeak — Area in the hull at the extreme rear end of a vessel; usually used for storage. *Also see* Forepeak.

Aground — Vessel resting wholly or partly on the ground instead of being entirely supported by the water. If done intentionally, a vessel is said to "take the ground"; if by accident, it is said to have "run aground."

Ahead — In front of a vessel; may indicate direction (an object may lie ahead) or to indicate movement (proceed at "full speed ahead").

Amidships — Center of a vessel's length, halfway between the bow and the stern.

Anchorage — Designated areas, identified on navigational charts, where ships may safely anchor.

Anchor Light — Light a vessel carries when at anchor; must be visible for 2 miles (3.22 km) at night in every direction. Vessels over 150 feet (45.7 m) must carry two lights visible for 3 miles (4.83 km).

Angle of Loll — Angle at which an imbalanced vessel is leaning and to which the vessel will stabilize. *Also see* Loll and List.

Ashore — Leaving a vessel and stepping on land; opposite of aboard.

Athwartship — Direction from side to side. To move across a vessel is to move athwartships.

B

Backstay — Line made of rope or wire supporting a mast (vertical pole); extends from the top of the mast to the stern.

Ballast — Additional weight placed low in the vessel's hull to improve its stability; may be steel, concrete, or water. *Also see* Ballasting, Ballast Tank, and Trim.

Ballasting — Process of filling empty tanks with seawater to increase a vessel's stability. *Also see* Ballast, Ballast Tank, and Trim.

Ballast Tank — Watertight compartment that holds liquid ballast. *Also see* Trimming Tank.

Barge — Long, large vessel (usually flat-bottomed, self-propelled, or towed or pushed by another vessel) used for transporting goods on inland waterways. *Also see* Lighter.

Barrel — Measure of liquid volume used in the marine industry; for petroleum, 1 barrel = 42 U.S. gallons (159 liters).

Batten — (1) Thin iron bar used to hold down the coverings of hatches on merchant vessels. (2) Strip of wood used to keep cargo away from the hull of a vessel or to prevent it from shifting.

Beam — Width of a vessel measured at the widest point.

Below — Anywhere on board below the level of the upper deck; downstairs.

Berth — (1) Mooring or docking a vessel alongside a pier, wharf, or bulkhead. (2) Sleeping space. *Also see* Berthing Area and Mooring (3).

Berthing Area — (1) Space at a wharf or pier for docking a vessel; place where a vessel comes to rest. (2) Bed or bunk space on a vessel. *Also see* Berth and Mooring (3).

Bilge — Lowest inner part of a vessel's hull; flat part of bottom of vessel.

Bilge Pump — Small pump located in the bilge used to remove internal water.

Bill of Lading — Document that establishes the terms of a contract between a shipper and a transportation company; serves as a document of title, a contract of carriage, and a receipt for goods.

Bitts — Single or twin set of upright wood or steel posts located on deck along the sides of a vessel used for securing mooring lines. *Also see* Bollard.

Boat — Small craft capable of being carried onboard a vessel.

Boat Deck — Uppermost deck on which lifeboats and other lifesaving appliances are stowed; used as a promenade space on passenger vessels. *Also see* Deck.

Boat Hook — Long pole with distinctive hook at the end used for fending off other boats and retrieving or picking up mooring lines.

Boatswain (Bosun) — Petty officer on a merchant vessel who has charge of the deck crew, hull maintenance, and related work.

Boiler Room — Compartment containing boilers but not containing a station for operating or firing the boilers.

Bollard — Stout vertical post (single or double) on a pier or wharf used for securing a vessel's mooring lines; common along piers where large vessels are moored. *Also see* Bitts.

Boom — (1) Pole rigged for use as a crane on board a vessel. (2) Floating object used to confine materials upon the surface of the water.

Bow — Front end or forward part of a vessel; opposite of the stern.

Bow Thruster — Large propeller mounted in a tunnel located in the forward part of the vessel used to assist the vessel in docking and undocking; reduces the need for assistance from tugs.

Break Bulk Cargo — Loose, noncontainerized cargo commonly packaged in bags, drums, cartons, crates, etc.

Break Bulk Terminal — Shore facility handling cargo shipped in bags, steel drums, cartons, crates, or pallets. Typical cargoes are rolls of paper, bags of fertilizer, coils of wire, or packages of steel.

Bridge — (1) Control center on modern mechanized vessels; forward part of a vessel's superstructure. (2) Persons in charge of a vessel.

Bulk Cargo — Homogeneous cargo (oil, grain, coal, bricks, lumber, or ore) stowed loose in a hold and not enclosed in any container such as boxes, bales, or bags.

Bulkhead — (1) Upright, vertical partition (wall) dividing a vessel into compartments (rooms); serves to retard the spread of liquids or fire. (2) Vertical row of wood or metal pilings or stone blocks along a shoreline that has been back-filled to protect the shore from erosion or form a berth for a vessel. *Also see* Main Transverse Bulkheads and Main Watertight Subdivision.

Bulk Terminal — Handling area for cargoes (unpackaged commodities carried in holds and tanks of cargo vessels and tankers) that are loaded and unloaded by conveyors, pipelines, or cranes. A *liquid bulk terminal* handles cargoes such as fuel, lubricating oils, and chemicals. *Also see* Dry Bulk Terminal.

Bulwark — Wall built around the edge of a vessel's upper deck.

Buoyancy (B) — (1) Tendency or capacity to remain afloat in a liquid. (2) Upward force of a fluid upon a floating object. *Also see* Center of Buoyancy.

C

Canadian Coast Guard (CCG) — Marine law enforcement and rescue agency in Canada; responsible for the safety, order, and operation of maritime traffic.

Captain — Commander of a vessel. *Also see* Master.

Captain of the Port (COTP) — U.S. Coast Guard person who has broad powers over all vessels in a port area in the United States; equivalent to Harbormaster in the United Kingdom.

Cargo Manifest — Document that lists all cargo carried on a specific vessel voyage.

Cargo Plan — View of a vessel showing all the storage space available for cargo; shows the amount and type of cargo carried, its destination, and how it will be stowed.

Car Terminal — Facility for loading and unloading vessels specially designed to transport automobiles.

CCG — Abbreviation for Canadian Coast Guard.

Centerline — Imaginary line running the length of a vessel from the point of the bow to the center of the stern; equidistant from the port and starboard sides of a vessel.

Center of Buoyancy — Geometrical center of the underwater volume of a body; considered to be the point through which all forces of buoyancy are acting vertically upwards with a force equal to the weight of a body. *Also see* Buoyancy.

Center of Gravity — Point through which all the weight of a vessel and its contents may be considered as concentrated so that if supported at this point, the vessel would remain in equilibrium in any position. *Also see* Gravity.

Chief Engineer — Senior engineering officer responsible for the satisfactory working and upkeep of the main and auxiliary machinery on board a vessel.

Chief Officer — Deck officer immediately responsible to a vessel's master on board a merchant vessel; officer next in rank to the master; also called *chief mate, first mate,* or *mate*.

Chief Steward — Person in charge of the steward's department; responsible for the comfort and service of passengers on passenger vessels; obtains and regulates the issue of provisions and stores and is in charge of the inspection and proper storage of provisions.

Chock — (1) Cast metal ring mounted to the deck edge to control a mooring line or prevent chafing of the line; closed chock requires one end of the mooring line to pass through the center of the chock; open chock allows the line to be dropped in from the top. (2) Piece of wood or other material placed at the side of cargo to prevent rolling or moving sideways. *Also see* Fairlead.

Cleat — (1) Fitting consisting of two arms fastened on deck around which mooring lines may be secured. (2) Strip of wood or metal to give additional strength, prevent warping, or hold in place.

Coaming — Raised framework around deck or bulkhead openings; used to prevent entry of water.

Cofferdam — Narrow, empty space (void) between compartments or tanks of a vessel that prevents leakage between them; used to isolate compartments or tanks.

Collision Bulkhead — Stronger-than-normal bulkhead located forward to control flooding in the event of a head-on collision.

Companionway — Interior stair-ladder used to travel from deck to deck (usually enclosed).

Company — Term that embraces the whole crew of a vessel.

Compartment — Interior space (room) of a vessel; numbered from forward to aft with odd numbers on starboard side and even numbers on port side.

Compartmentation — Subdividing of a vessel's hull by transverse watertight bulkheads; may allow a vessel to stay afloat under certain flooding conditions. *Also see* One-Compartment Subdivision.

Containers — Boxes of standardized size used to transport cargo by truck or rail car when transported over land and by cargo vessels at sea; sizes are usually 8 × 8 × 20 feet or 8 × 8 × 40 feet (2.4 m by 2.4 m by 6 m or 2.4 m by 2.4 m by 12.2 m). *Also see* Reefer Containers and Container Terminal.

Confinement — Effort to establish control over a fire by impeding its extension to noninvolved areas; to limit a fire.

Container Terminal — Facility for loading and unloading cargoes shipped in containers and their stowage; usually accessible by truck, railroad, and marine transportation. *Also see* Containers and Reefer Containers.

COTP — Abbreviation for U.S. Coast Guard Captain of the Port.

Crew List — Part of a vessel's papers listing the names and nationalities of every member of the crew, capacity in which each member serves, and amount of wages each member receives.

Critical Angle of List — Point at which critical events will occur; not a point that remains constant in all cases; determined by stability calculations made by qualified personnel along with their professional judgment. *Also see* List and Heel.

Culture — Behavior typical of a group or class.

Current — Horizontal movement of water; formed by wind, tides, rotation of the earth, and the effects of temperature.

D

Damage Control Locker — Compartment containing fire fighting/emergency equipment.

Deck — Continuous, horizontal surface (floor) running the length of a vessel; some may not extend the whole length of a vessel but always reaches from one side to the other. *Also see* Boat Deck, Main Deck, Tank Top, Tween Deck, Poop Deck, Upper Deck, and Weather Deck.

Deckhead — See *Overhead.*

Dewatering — Process of removing water from a vessel.

Displacement — Weight or volume of water displaced by a floating vessel of equal weight; weight of the vessel (including its load) is measured in long tons (1 long ton = 2,240 pounds or 1 tonne [1,000 kilograms]).

Diurnal — Tide pattern that has one high and one low in a 24-hour period.

Dog — Locking levers or bolts and thumbscrews on watertight doors.

Dog the Hatches — Close the doors.

Double Bottom — Top of a series of tanks and void spaces placed along the bottom of a vessel; extra watertight floor within a vessel above the outer watertight hull; void or tank space between the outer hull of a vessel and the floor of a vessel. Also know as the *inner bottom* or *tank top*.

Draft — Vertical distance between the water surface and the lowest point of a vessel; depth of water a vessel needs in order to float. Draft varies with the amount of cargo, fuel, and other loads on board. *Also see* Draft Marks.

Drafting — Act of acquiring water for fire pumps from a static water supply by creating a negative pressure on the vacuum side of the fire pump.

Draft Marks — Numerals on the ends of a vessel indicating the depth of the vessel in the water. *Also see* Draft.

Dry Bulk Terminal — Facility equipped to handle dry goods (such as coal or grain) that are stored in tanks and holds on a vessel. *Also see* Bulk Terminal.

Dry Dock — Enclosed area into which a vessel floats but where water is then removed leaving the vessel dry for repairs, cleaning, or construction.

Dunnage — Loose packing material (usually wood boards and wedges) that is placed around cargo in a vessel's hold to support, protect, or prevent it from moving while the vessel is at sea.

E

Ebb Tide — Falling tide; opposite of Flood Tide.

Economizer — Assembly of coils in a vessel's stack (chimney) designed to transfer heat rising up the stack to water within the tubes. *Also see* Fiddley and Stack.

Escape Trunk — Vertical, enclosed shaft with a ladder providing an escape path for crew stationed in low areas of a vessel.

Explosionproof Equipment — Encased in a rigidly built container so it withstands an internal explosion and also prevents ignition of a surrounding flammable atmosphere; designed to not provide an ignition source in an explosive atmosphere.

Extinguishment — Attack and suppression of a fire.

F

Fairlead – Chock or opening, sometimes fitted with a roller device designed to lead a rope or line from one part of a vessel to another (change line direction); also controls lines and minimizes chafing. *Also see* Chock (1).

Fantail — Back part of a vessel that hangs out over the water; stern overhang.

Fast — Term referring to a vessel being securely attached to a wharf or dock.

Fender — Buffer between the side of a vessel and a dock or between two vessels to lessen shock and prevent chafing.

Fiddley — Vertical space extending from the engine room to a vessel's stack (chimney). *Also see* Economizer and Stack.

Fire Alarm Signal — Continuous rapid ringing of a vessel's bell for a period of not less than 10 seconds supplemented by the continuous ringing of the general alarm bells for not less than 10 seconds.

Fire Control Plan — Set of general arrangement plans for each deck that illustrate fire stations, fire-resisting bulkheads, and fire-retarding bulkheads together with particulars of fire detecting systems, manual alarm systems, fire extinguishing systems, fire doors, means of access to different compartments, and ventilating systems (including locations of dampers and fan controls). Plans are stored in a prominently marked weathertight enclosure outside the house for the assistance of land-based fire fighting personnel.

Fire Main System — System that supplies water to all areas of a vessel; composed of fire pumps, piping (main and branch lines), control valves, hose, and nozzles.

Fire Pump — Centrifugal or reciprocating pump that supplies seawater to all fire hose connections.

Fire Station — Location on a vessel with fire fighting water outlet (fire hydrant), valve, fire hose, nozzles, and associated equipment.

Fire Wire — Length of wire rope or chain hung from the bow and stern of a vessel in port to allow the vessel to be towed away from the pier in case of fire; also called *fire warp* or *emergency towing wire.*

Flag State — Nation in which a vessel is registered.

Flood Tide — Rising tide, opposite of Ebb Tide.

Forecastle (Fo'c's'le or Fok-sul) — Section of the upper deck located at the bow of a vessel; forward section of the main deck; a superstructure at the bow of a ship where maintenance shops, rope lockers, and paint lockers are located.

Forepeak — Watertight compartment at the extreme forward end of a vessel; usually used for storage. *Also see* Afterpeak.

Forward (Fore) — Direction toward the front (bow) of a vessel.

Frames — Structural members of a vessel's framework that attach perpendicularly to the keel to form the ribs of the vessel. *Also see* Keel.

Freeboard — Vertical distance between a vessel's lowest open deck and the water surface; measured near the center of the vessel's length where the deck is closest to the water.

Free Surface Effect — Tendency of a liquid within a compartment to remain level as a vessel moves, which allows the liquid to move unimpeded from side to side. Loose water anywhere in a vessel impairs stability by raising the center of gravity. *Also see* Center of Gravity, Center of Buoyancy, and Stability.

G

Galley — Vessel's kitchen facility.

Gangway — Opening in the railings on the side of a vessel for a ladder or ramp providing access to a vessel from the shore.

Gantry — Overhead cross-girder structure on which a traveling crane is mounted or from which heavy tackle is suspended. Supporting towers at each end of the structure are on wheels.

Gas-Free Certificate — Document stating that an authorized and trained person has evaluated the atmosphere of a space, tank, or container (using approved equipment and methods) and determined that the atmosphere is safe for a specific purpose. Also called *gas certificate* or *certified gas-free.*

Gravity (G) — Force acting to draw an object toward the earth's center; force is equal to the object's weight. *Also see* Center of Gravity.

Gunwale (Gunnel) — Raised edge along the side of a vessel that prevents loose items on deck from falling overboard; sometimes called *fishplate.*

H

Harbormaster — Person in charge of a port (anchorages, dock spaces, etc.) in the United Kingdom; equivalent to U.S. Coast Guard Captain of the Port in the United States.

Hatch — Opening in the deck of a vessel that leads to a vertical space down through the various decks (hatchway); covered by a hatch cover (hinged or sliding).

Heel — Angle a vessel leans to one side due to wind, waves, or turning of the vessel; measured in degrees. *Also see* Critical Angle of List, Heeling, and List.

Heeling — (1) Tipping or leaning to one side. (2) Causing a vessel to list (continuous lean to one side). *Also see* Heel and List.

Hog — Vertical distance of a vessel's keel at amidships above a vessel's keel at the bow and stern; to bow up in the middle and sag at the ends as a result of improper loading. *Also see* Hogging, Sag, and Sagging.

Hogging — Straining of a vessel that tends to make the bow and stern lower than the middle portion; the middle section has greater buoyancy. *Also see* Hog, Sag, and Sagging.

Hot Work — Any construction, alteration, repair, or shipbreaking operation involving riveting, welding, burning, or similar fire-producing operations.

House — Structure located above the main deck. *Also see* Superstructure.

Hull — Main structural frame or body of a vessel below the weather deck.

I

IMO — Abbreviation for International Maritime Organization.

Inclinometer — Instrument that measures the angle at which a vessel is leaning to one side or the other.

International Convention for the Safety of Life at Sea (SOLAS) — International convention dealing with maritime safety; covers a wide range of measures designed to improve the safety of shipping. The first version was adopted in 1914. Since then, four more versions have been adopted. The present version was adopted in 1974 and became effective in 1980. The Protocol of 1978 and Amendments of 1990 and 1991 have been added since.

International Maritime Organization (IMO) — Specialized agency of the United Nations devoted to maritime affairs. It first met in 1959. Over the years, IMO has developed and promoted the adoption of more than 30 conventions and protocols as well as 700 codes and recommendations dealing with maritime safety. Its main purposes are safer shipping and cleaner oceans.

International Shore Connection — Pipe flange with a standard size and bolt pattern allowing land-based fire department personnel to charge and supply a vessel's fire main.

Intrinsically Safe Equipment — Incapable of releasing sufficient electrical energy to cause the ignition of a flammable atmospheric mixture.

J

Jacob's Ladder — Flexible ladder made of rope or chain but having solid rungs (wood or iron) used for boarding a vessel or scaling the sides of a vessel.

Jettison — To throw objects or cargo overboard in order to lighten a vessel's load in time of distress.

Joiner Construction — Bulkheads that subdivide the ship into compartments but do not contribute to the structural strength of the ship. Also known as *nonstructural bulkheads.*

K

Keel — Principal structural member of a vessel running fore and aft extending from bow to stern; forms the backbone of a vessel to which frames are attached; lowest member of a vessel framework. *Also see* Frames.

Knot — International nautical unit of speed; 1 knot = 6,076 feet or 1 nautical mile per hour (1.15 miles or 1.85 kilometers per hour).

L

Ladder — Any stairway or ladder (often nearly vertical) onboard a vessel.

Lash — Secure or tie anything down or to something else with rope or line.

Length Overall (LOA) — Total length of a vessel, including any spars or guards that may extend out from a vessel's ends. *Also see* Length on the Waterline

Length on the Waterline (LWL) — Measurement of a vessel from front to back at the level at which it floats in the water. *Also see* Length Overall.

Lift on/Lift off (Lo/Lo) — Refers to a vessel capable of loading and unloading its own cargo without shoreside crane assistance.

Lighter — Large boat or barge (usually nonpowered) for conveying cargo to and from vessels in harbor, transporting coal or construction materials, transporting garbage, etc. *Also see* Barge.

Line — Length of rope in use on a vessel.

List — Continuous lean or tilt of a vessel to one side due to an imbalance of weight within the vessel. *Also see* Heel, Heeling, Loll, Critical Angle of List, and Angle of Loll.

LOA — Abbreviation for Length Overall.

Load Line — *See* Plimsoll Mark.

Loll — Neutral equilibrium when vessel comes to rest within a range of stability as opposed to a point of stability, that is, instead of being stable when upright, the vessel may be stable within 1 degree to port or starboard sides and thus will lean either port or starboard. *Also see* List and Angle of Loll.

Longitudinal Stability — Ability of a vessel to return to an upright position when forced from its rest condition by pitching. *Also see* Stability and Static (Initial) Stability.

Long Ton — Unit of weight used in the marine industry; 1 long ton = 2,240 pounds or 1 tonne (1,000 kilograms). A short ton = 2,000 pounds or 0.9 tonne (900 kilograms).

Longshoreman — *See* Stevedore.

LWL — Abbreviation for Length on the Waterline.

M

Machinery — Vessel's main and auxiliary engines, pumps, deck winches, steering engine, hoists, etc.

Main Deck — Uppermost continuous deck of a vessel that runs from bow to stern. *See* Deck.

Main Transverse Bulkheads — Watertight bulkheads that subdivide a vessel into watertight compartments. *Also see* Bulkhead (1) and Main Watertight Subdivision.

Main Watertight Subdivision — Space between two main transverse watertight bulkheads. *Also see* Bulkhead (1) and Main Transverse Bulkheads.

Manifest — *See* Cargo Manifest.

Marina — Special harbor with facilities constructed especially for yachts and other pleasure craft.

Maritime Law — Laws relating to commerce and navigation on the high seas and other navigable waters; a court exercising jurisdiction over maritime cases. Also known as *admiralty law.*

Mast — Vertical pole rising from the keel or deck of a vessel supporting sailing rigging; also used for radio antennas and signal flags.

Master — Commander of a merchant vessel. *Also see* Captain.

Mate — *See* Chief Officer.

Mayday — International distress signal broadcast by voice.

Metacenter (M) — Point through which the force of buoyancy works; point of intersection of the vertical through the center of buoyancy of a floating body with the vertical through the new center of buoyancy when the body is displaced. *Also see* Metacentric Height and Center of Buoyancy.

Metacentric Height (GM) — Measure of a vessel's initial stability; a geometric relationship between the center of gravity, the center of buoyancy, and the metacenter; distance of the metacenter above the center of gravity of a floating body. *Also see* Metacenter, Center of Gravity, and Center of Buoyancy.

Mooring — (1) Permanent anchor equipment (attached by a chain to a buoy) to which a vessel may connect a line, wire, or chain, eliminating the need to use the vessel's anchor. (2) Act of securing a vessel. (3) Location where a vessel is berthed. *Also see* Anchorage, Berth, and Berthing Area.

MT — Prefix to the name of a tank vessel powered by diesel machinery.

Muster List — List of crew members/passengers and their duty/emergency stations on a vessel.

MV — Prefix to the name of a vessel powered by diesel machinery.

N

Naval Architecture — Branch of knowledge concerned with the design and construction of things that float (vessels, submarines, docks, yachts, etc.)

Navigable — Term for any body of water suitable for navigation by any particular vessel (not necessarily all vessels).

Night Order Book — Written instructions, special orders, or reminders from the captain or master for each officer taking night watch; placed in the chart room before the captain or master retires for the night.

Number — Letters allocated on an international scale to every merchant vessel. A vessel may be identified by hoisting signal flags representing the letters forming the number.

O

Oil Tanker — Tank vessel specially designed for the bulk transport of petroleum products by sea. Also called *tanker.*

One-Compartment Subdivision — Subdivision of a vessel by bulkheads that will result in a vessel remaining afloat with any one compartment flooded under certain conditions. *Also see* Compartmentation.

Outboard — Anything that is on the seaside of a vessel; anything mounted outside the hull.

Overall Length — See Length Overall. *Also see* Length at Waterline.

Overhead — Underside of a deck; ceiling of a vessel's compartment; also known as *deckhead.*

P

Passageway — Any interior walkway, corridor, or hallway in a vessel.

Pier — Platform (usually wood or masonry) extending outward from the shore into the water for use as a landing place for vessels; supported on pilings and open underneath allowing the berthing of vessels alongside. *Also see* Wharf.

Pilot — Person knowledgeable of the local waters who meets vessels and steers them safely into and out of port.

Platform — (1) Horizontal surface extending partway through a vessel; usually in the cargo space. (2) Any flat-topped vessel capable of providing a working area for personnel or vehicles.

Plimsoll Mark — Symbol placed on the sides of a vessel's hull at amidships, indicating the maximum allowable draft of the vessel. Also called *Plimsoll line* or *load line.*

Poop Deck — Partial deck above main deck at stern. *Also see* Deck.

Port — General area of a shore establishment having facilities for the landing, loading/unloading, and maintenance of vessels; harbor with piers.

Portable Pump — Small gasoline-driven pump used in emergencies to deliver water to a fire independent of a vessel's fire main system.

Port Authority — Person(s) entrusted with the duty or power of construction, improving, managing, or maintaining a harbor or port. Also called *harbor authority, harbor board, port trust,* or *port commission.*

Porthole — Circular window in the side of a vessel.

Port of Registry — Port at which a vessel is registered. Also called *home port.*

Port Side — Left-hand side of a vessel as a person faces forward.

Port State — Nation in which a port is located.

Port State Authority — Government agency having authority over port operations.

Positive-Pressure Ventilation — Method of ventilating a space by mechanically blowing air into the space in sufficient volume to create a slight positive pressure within and thereby forcing the contaminated atmosphere out the exit opening. *Also see* Ventilation.

Pump Room — Compartment in tank vessels where the pumping plant for handling cargo is installed. Pumps are placed as low as possible in order to facilitate draining. In oil tankers over 400 feet (12.2 m) long, two pump rooms are provided along with a ballast pump in some cases.

R

Reefer Containers — Cargo containers having their own refrigeration units. *Also see* Containers and Container Terminal.

Refrigerated Vessel — Vessel specially designed and equipped for the transportation of food products (meat, fruit, fish, butter, and eggs) under cold storage; cargo space is insulated for this purpose.

Refrigerating Plant — Installation of machinery for the purposes of cooling designated spaces aboard a vessel and for manufacturing ice.

Righting Arm — Moment that tends to return a vessel to the upright position after any small rotational displacement. Also called *righting moment* or *restoring moment.*

Riser — Pipe leading from the fire main to the fire station (hydrants) on upper deck levels of a vessel.

Ro/Ro — Abbreviation for Roll on/Roll off.

Roll on/Roll off (Ro/Ro) — Form of cargo handling using a vessel designed to carry vehicles that are loaded and unloaded by driving them onto/off the vessel by means of ramps. A vehicle ferry is a ro/ro vessel.

S

Sag —To curve downward in the middle as a result of improper loading. *Also see* Sagging, Hog, and Hogging.

Sagging — Straining of a vessel that tends to make the middle portion lower than the bow and stern. *Also see* Sag, Hog, and Hogging.

Sail Area — Area of a vessel (viewed from the side) that is above the waterline and is subject to the force of the wind.

Scantlings — Dimensions of the various parts of a vessel (frames, girders, plating, etc.).

Scupper — Opening in the side of a vessel to allow water falling on deck to drain overboard.

Sea Chest — (1) Enclosure attached to the inside of a vessel's underwater shell open to the sea and fitted with a portable strainer plate; passes seawater into the vessel for cooling, fire fighting, or sanitary purposes. (2) Storage chest for mariner's personal property.

Seaworthy — In fit condition to go safely to sea.

Secure — (1) To make fast such as secure a line to a cleat. (2) Close in a manner to avoid accidental opening or operation.

Self-Closing Door — Installation in which watertight doors are remotely operated by a hydraulic pressure system, allowing them to be closed simultaneously from the bridge or separately at the doors from either side of the bulkhead.

Semidiurnal — Tide pattern that has two high tides and two low tides in a 24-hour period.

Shaft Alley — Narrow, watertight compartment between the engine room and the stern of a vessel that houses the propeller shaft; also called *shaft tunnel.*

Shaftway — Tunnel or alleyway through which the drive shaft or rudder shaft passes.

Shoring (Shoring Timbers) — Heavy timbers used to support bulkheads damaged by collision; also used to secure cargo; also prop or support placed against or beneath anything to prevent sinking or sagging.

Sick Bay — Compartment, cabin, or area in a vessel reserved for the treatment of sick or injured crew members.

Slack Water — Period of no horizontal movement of water during the rise and fall of the tide; occurs at both maximum tide rise or fall when the tide is about to turn. Also called *slack tide.*

SOLAS — Acronym for International Convention for the Safety of Life at Sea.

Sounding — Name of the measurement of the depth of water in which a vessel is floating. *Also see* Sound, To.

Sound, To — Operation of measuring the depth of water in which a vessel is floating. *Also see* Sounding.

SS — Prefix to the name of a vessel with a steam propulsion plant.

Stability — Tendency of a floating vessel to return to an upright position when inclined from the vertical by an external force (winds, waves, etc.). When a vessel returns to or remains at rest after being acted upon, it is either in stable or *neutral equilibrium.* If it continues to move unchecked in reaction to the external force, it is in *unstable equilibrium.* If an unstable vessel does not find a point of stable or neutral stability, it continues to incline until it capsizes. *Also see* Free Surface Effect, Static (Initial) Stability and Longitudinal Stability.

Stack — Ducting through which exhaust gases and often supply gas are routed; chimney. *Also see*

Economizer and Fiddley.

Starboard Side — Right-hand side of a vessel as a person faces forward.

Static (Initial) Stability — Ability of a vessel to initially resist heeling from the upright position. Initial stability characteristics hold true only for relatively small angles of inclination. At larger angles (over 10 degrees), the ability of a vessel to resist inclining moments is determined by its overall stability characteristics. *Also see* Stability and Longitudinal Stability.

Station Bill — List of all crew members showing where they should be for the various operations involved in operating a vessel; shows the duty stations and duties of the crew by rank.

Steam Smothering — Installed fire suppression system found on old vessels used to protect spaces where fire is likely to occur (engine room, cargo spaces, paint locker, etc.)

Steering Gear — All the apparatus by which a vessel is steered; includes wheel, rudder, and ropes or chains connected to them.

Stern — Back end or rear of a vessel.

Stevedore — One who works at or is responsible for the loading and unloading of cargo of a vessel in port; sometimes called *longshoreman.*

Superstructure — Enclosed structure built above the main deck that extends from one side of a vessel to the other. *Also see* House.

Supply/Exhaust Ventilation — Combined supply and exhaust system of mechanical ventilation that is generally used in the ventilation of passenger quarters. *Also see* Ventilation.

SV — Prefix to the name of a vessel propelled by sail.

Swash Plates — Metal plates in the lower part of tanks that prevent the surging of liquids with the motion of a vessel.

T

Tanker — *See* Oil Tanker.

Tankerman — Person qualified and certified to perform all duties included in the handling of bulk liquid cargoes (petroleum products). *Also see* Oil Tanker.

Tank Top — Lowest deck; top plate of the bottom tanks. *Also see* Deck.

Terminal — *See* Break Bulk Terminal, Bulk Terminal, Dry Bulk Terminal, Car Terminal, and Container Terminal.

Tide — Periodic vertical rise and fall of the water surface level of the oceans, bays, gulfs, inlets, and tidal regions of rivers caused by the gravitational attraction of the sun and moon.

Tonnage — Amount of internal volume or carrying capacity of a vessel in units of 100 cubic feet (2.8 m^3); used for determining port and canal charges.

Topside — General term referring to the weather decks as opposed to belowdeck.

Towboat — Powerful, small vessel designed for pushing larger vessels such as barges on inland waterways. *Also see* Tugboat.

Transshipment — Transfer of cargo from a vessel to another vessel before the place of destination has been reached.

Transverse — Athwartship (side to side) dimensions of a vessel.

Trim — Longitudinal angle of a vessel; relation of a vessel's floating attitude to the water considered from front to back; difference between forward and aft draft readings; to cause a vessel to assume a desirable position in the water by arrangement of ballast, cargo, or passengers. *Also see* Trimming Tank and Ballast.

Trimming Tank — Tank located near the ends of a vessel used for changing the trim of a vessel by admitting or discharging water ballast. *Also see* Trim and Ballast Tank.

Tugboat — Strongly built powerful boat used for towing and pushing in harbors and inland waterways. *Also see* Towboat.

Tween Deck — Intermediate deck between the main deck and the bottom of a cargo hold; designed to support cargo so that the cargo at the bottom of the hold is not crushed by the weight of cargo above it. *Also see* Deck.

U

Ullage — Amount that a partially filled tank lacks being full; measure of the empty part of a tank. *Also see* Ullage Hole.

Ullage Hole — Opening, usually located in the hatch cover, leading to a liquid cargo tank that allows measuring of liquid cargo. *Also see* Ullage.

United States Coast Guard (USCG) — Federal marine law enforcement and rescue agency in the United States; responsible for the safety, order, and operation of maritime traffic.

Upper Deck — Topmost continuous deck running the whole length and width of a vessel. *Also see* Deck.

USCG — Abbreviation for United States Coast Guard.

V

Vaportight Fixture — Fixture sealed to prevent an explosive atmosphere from entering the device's electrical contacts where an ignition spark could be generated.

Ventilation — Process of replacing foul air in any of a vessel's compartments with pure air. *Also See* Positive-Pressure Ventilation and Supply/Exhaust Ventilation.

Vertical Zone — Area of a vessel between adjacent bulkheads.

Vessel — General term for all craft capable of floating on water and larger than a rowboat.

W

Watch — (1) Division of a day that constitutes a period of duty for a crew member on a vessel; a crew member's assigned duty period. (2) One who watches; lookout assigned to patrol. *Also see* Watch Officer.

Watch Officer — Officer in charge of a watch; has the responsibility of the safe and proper navigation of the vessel during this time period. *Also see* Watch.

Waterline — Level at which a vessel floats; line to which water raises on hull.

Waterline Length — *See* Length at Waterline. *Also see* Length Overall.

Watertight Bulkhead — Bulkhead (wall) strengthened and sealed to form a barrier against flooding. *Also see* Bulkhead (1).

Watertight Door — Door designed to keep out water; fitted to ensure integrity of the bulkheads (walls).

Watertight Transverse Bulkhead — Bulkhead (wall) that has no openings through it and extends from tank top to the main deck; built to control flooding. *Also see* Bulkhead (1) and Watertight Bulkhead.

Weather Deck — All parts of main deck and decks above that are exposed to the weather. *Also see* Deck.

Wharf — Place for berthing ships along or at an angle from a shore; constructed by extending bulkheads out from the shore and back-filling the enclosed area to create a flat surface for loading and unloading vessels. *Also see* Pier.

Winch — Stationary, motor-driven hoisting machine having a vertical drum around which a rope or chain winds as a load is lifted. A special form of winch using a horizontal drum is a *windlass.*

Wing Tank — Tank located well outboard next to the side shell plating of a vessel; often a continuation of the double bottom up the sides to a deck.